

**Ex 5.4****NCERT Solutions by Dev Anoop (Bathinda)**

$$\textcircled{3} a=45, a_n=25$$

$$\begin{aligned} \text{no. of rungs} &= \frac{250}{25} + 1 \\ &= 10 + 1 \\ &= 11 \end{aligned}$$

$$\therefore n = 11$$

$$S_{11} =$$

$$\begin{aligned} &= \frac{n}{2} (a+l) \\ &= \frac{11}{2} (45+25) \\ &= \frac{11}{2} \times 70^{35} \\ &= 11 \times 35 \\ &= 385 \end{aligned}$$

$$\begin{aligned} \therefore \text{length of wood} \\ \text{used for rungs} \\ &= 385 \text{ cm} \\ &= 3.85 \text{ m} \end{aligned}$$

$$\textcircled{4}$$

$$1, 2, 3, 4, \dots, 47, 48, 49$$

$$\boxed{1, 2, 3, \dots, x-1, x, x+1, \dots, 49}$$

I A.P. II A.P.

$$\begin{aligned} a &= 1 & a' &= x+1 \\ d &= 2-1 & d' &= 1 \\ &= 1 & n' &= 49-x \end{aligned}$$

$$n = x-1$$

$$\begin{aligned} S_n &= \frac{x-1}{2} (1+x-1) & S_{n'} &= \frac{49-x}{2} (x+1+49) \\ &= \frac{x-1}{2} \times x & &= \frac{(49-x)(x+50)}{2} \\ &= \frac{x(x-1)}{2} \end{aligned}$$

ac to prob

$$\frac{x(x-1)}{2} = \frac{(49-x)(x+50)}{2}$$

$$\Rightarrow x^2 - x = -x^2 - 50x + 49x + 2450$$

$$\Rightarrow x^2 - 1225 = 0$$

$$\Rightarrow x^2 - 35^2 = 0$$

$$\Rightarrow (x-35)(x+35) = 0$$

$$\Rightarrow x-35=0, x+35=0$$

$$\Rightarrow x=35, x=-35$$

$$\therefore x=35$$

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